

1 CLAIMS

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3 1. A downhole tool for conditioning a casing or liner
4 wall, the tool comprising a substantially
5 cylindrical body connectable in a work string, a
6 sleeve located around the body, one or more blades
7 located on the sleeve, wherein each blade has a
8 circular peripheral edge distal to the sleeve and
9 each blade is manufactured from a composite material
10 which comprises a polymeric fibre.

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12 2. A downhole tool as claimed in Claim 1 wherein the
13 polymeric fibre is chosen from the group comprising
14 polyaramid fibres, polyethylene fibres,
15 polypropylene fibres, polyacryl fibres, polyester
16 fibres, polyacryl fibres or poly{2,6-diimidazo[4,5-
17 b4',5'-e]pyridinylen-1,4(2,5-dihydroxy)phenylene}
18 (PIPD) fibres.

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20 3. A downhole tool as claimed in Claim 1 wherein the
21 composite further includes carbon and glass fibre.

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23 4. A downhole tool as claimed in Claim 1 wherein the
24 composite is a KEVLAR® carbon glass composite.

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26 5. A downhole tool as claimed in Claim 1 wherein the
27 sleeve includes a plurality of bypass ports to allow
28 fluid to pass between the sleeve and the body so as
29 to bypass the blades.

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31 6. A downhole tool as claimed in Claim 1 wherein one or
32 more ports are located through the one or more

1 blades, the ports being distal from the peripheral
2 edge of the blade(s).

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4 7. A downhole tool as claimed in Claim 1 wherein the
5 sleeve includes one or more jetting ports to provide
6 a cleaning action on the blades.

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8 8. A downhole tool as claimed in Claim 1 wherein the
9 blades are located between flexible members.

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11 9. A downhole tool as claimed in Claim 1 wherein the
12 blades have an inner circumferential edge such that
13 they form a torus and wherein a diameter of the
14 blade at the inner circumferential edge is greater
15 than an outer diameter of the body at the location
16 of the blade on the body.

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18 10. A downhole tool as claimed in Claim 1 wherein the
19 tool includes one or more centralisers to assist in
20 keeping the tool centrally aligned in the casing or
21 liner.

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23 11. A downhole tool as claimed in Claim 1 wherein the
24 sleeve(s) are held to the tool body by one or more
25 holding devices to prevent longitudinal movement of
26 the sleeve(s) on the tool body and transfer the load
27 on the sleeve to the body.

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29 12. A holding device for preventing longitudinal
30 movement of a sleeve(s) on a substantially
31 cylindrical tool body, the device comprising a split
32 ring, a retaining ring and a circlip.

1 13. A holding device as claimed in Claim 12 wherein the
2 retaining ring comprises a circular member including
3 a circular groove located at a first end thereof,
4 and wherein the split ring locates in the groove
5 such that the split ring is retained by the
6 retaining ring and bears the load from the sleeve.
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8 14. A holding device as claimed in Claim 13 wherein the
9 circlip is located at a second end of the retaining
10 ring and holds the retaining ring in place, bearing
11 no load from the sleeve.
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13 15. A method of conditioning a casing or liner in a well
14 bore, the method comprising the steps:
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- 16 (a) locating on a work string, a blade having a
17 circular peripheral edge and made from a
18 composite material which comprises a polymeric
19 fibre;
20 (b) inserting the work string into the well bore to
21 a position where the peripheral edge makes
22 contact with an inner wall of the casing or
23 liner; and
24 (c) moving the work string relative to the inner
25 wall to thereby move the blade relative to the
26 wall and provide a grooming action on the wall.
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28 16. A method of conditioning a casing or liner in a well
29 bore as claimed in Claim 15 wherein the blade makes
30 360 degree contact between the peripheral edge and
31 the inner wall.
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- 1 17. A method of conditioning a casing or liner in a well
2 bore as claimed in Claim 15 wherein fluid bypasses
3 the peripheral edge of the blade through a bypass
4 channel in the tool.
5
- 6 18. A method of forming a scraper for a downhole tool,
7 the method comprising the steps;
8
- 9 (d) providing a sheet of composite material
10 comprising a polymeric fibre;
11 (e) instantaneously subjecting the material to a
12 first water pressure from a water jet; and
13 (f) moving the material relative to the jet to cut
14 a profile of a scraper from the material while
15 maintaining the water at substantially the
16 first pressure.
17
- 18 19. A method of forming a scraper for a downhole tool as
19 claimed in Claim 18 wherein the polymeric fibre is
20 chosen from the group comprising polyaramid fibres,
21 polyethylene fibres, polypropylene fibres, polyacryl
22 fibres, polyester fibres, polyacryl fibres or
23 poly{2,6-diimidazo[4,5-b4',5'-e]pyridinylene-
24 1,4(2,5-dihydroxy)phenylene} (PIPD) fibres.
25
- 26 20. A method of forming a scraper for a downhole tool as
27 claimed in Claim 18 wherein the composite further
28 includes carbon and glass fibre.
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- 30 21. A method of forming a scraper for a downhole tool as
31 claimed in any one of Claims 18 wherein the
32 composite is a KEVLAR® carbon glass composite.
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1 22. A method of forming a scraper for a downhole tool as
2 claimed in any one of Claims 18 wherein an abrasive
3 such as garnet is mixed with the water.